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U. S. DEPARTMENT OF AGRICULTURE,

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## HOW TEACHERS MAY USE FARMERS' BULLETIN 743, THE FEEDING OF DAIRY COWS.

*Range of use.*—All districts in which dairying is of any importance.

*Relation to the course of study.*—The bulletin will assist in the study of animal husbandry, especially in dairy practice, in the course in agriculture, and suggests suitable correlations with other school branches.

*Topics.*—The following grouping of topics is suggested for school use: A. Fall and winter lessons; (1) the need of liberal feeding, pages 1-3; (2) succulent feed, silage, and roots, page 9; roughage, page 10; (3) the balanced ration, pages 11 and 12; (4) nutritive value, etc., of grains and concentrates, pages 13-17; (5) rules for making grain mixtures, pages 18, 19; (6) selection of sample grain mixtures for local use, pages 19-22; (7) amount of roughage and grain, allowances for individual cow, pages 22, 23. B. Spring lessons; (8) pasturage, pages 3, 4; (9) supplements to pasture, grain, soiling crops, summer silo, pages 5-8. In a brief course this may be covered in a very few lessons, but in a more extended course each subdivision suggests more intensive study with home practice. In this case the questions which follow will lead to the use of bulletins published by the experiment stations of the respective States, also texts on feeds and feeding.

*Study questions.*—What is a maintenance ration? What does the maintenance ration accomplish? To what extent should the ration be increased beyond the maintenance ration? In winter feeding, what factors must be considered? Why are home-grown feeds generally desirable? Give examples of roughage, succulent foods, and concentrates for winter use. Which of these may be grown in this district? What are the relative advantages of silage and roots? Why can not the entire ration be made of roughage? What advantages has the leguminous hay over timothy hay or corn fodder? What is meant by the term "balanced ration"? Why is this balance important? To what extent should cost determine the ration? Which of the concentrates described are suited to local use? How may a grain mixture be compounded? Select grain mixtures for use with high, low, and medium protein roughages which might be obtained in the district. What economy is there in using high-



protein roughages? How much of roughage and of grain should be fed to a cow? Why is an abundance of pure water necessary? How secured? How salt the cows? What is the value of pasturage? What supplements to pasturage are profitable? Discuss the relative value of grain, soilings crops, and summer silage as pasture supplements.

*Illustrative material.*—The pupils should collect samples of all the home-grown feeds and all those purchased in the district. Before they leave the subject, have them preserve and label these specimens for the school museum. (See Farmers' Bulletins 586 and 606.) Have the pupils collect printed price lists of grain and other feeds. Graphic charts of the digestible nutrients of the more common feeds may be copied from bulletins.

*Practical exercises.*—Have as many pupils as possible try weighing milk and modifying rations of cows at home, in cooperation with their parents. Have a survey made of the dairy farms to include such data as amount of roughage grown on farm, amount of succulent feed, grain grown, amount of concentrates purchased, practice in feeding, method of balancing rations, method to determine amount of feed necessary, etc. Some pupils who are interested in dairying may take up a home project in dairying, weighing the milk of each cow, computing rations, testing milk, finding cost, income, and profit.

*Correlations.*—Have pupils compile the survey charts and compute the expense of rations in different cases. Use the local prices for hay and grain to determine the cost of different rations suggested in the bulletin. Use outline maps of the State and of the United States and indicate the source of feedstuffs used in the district, also the lines of transportation used. Look up freight rates and compute the relative loss due to long hauls on different feeds, especially those which might be grown in the district or others which have too low feeding value.

In the physiology class, discuss the different digestible nutrients in various feeds which may be used by persons as well as by cattle. Compare the demands of the human system for food with those of the cow, selecting points in which they are similar and those in which they are different. Consult other bulletins on grain crops used as human food, such as Farmers' Bulletins 121, 298, 559, and 565.

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